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JOINT MESSAGEFORM

SECURITY CLASSIFICATION
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PRECEDENCE		TYPE MSG (Check)			ACCOUNTING SYMBOL	ORIG. OR REFERS TO	CLASSIFICATION OF REFERENCE
ACTION		BOOK	MULTI	SINGLE			
INFO							

FROM:
6595TH AEROSPACE TEST WING, VANDENBERG AFB, CALIF.
~~VWZD-23-2-82~~
TO:
SPACE SYSTEMS DIV. L^{o}SA, CALIF.

SUBJECT: EIGHT-HOUR FLASH REPORT

I. SUMMARY

A VEHICLE CONSISTING OF THE FIRST SLV-2A BOOSTER (SERIAL NO. [redacted]) 354 AND AN 501A ORBITAL STAGE (SERIAL No. 1159) WAS LAUNCHED ON THE SECOND ATTEMPT FROM VAFB COMPLEX 75-3, PAD 5, AT 1348:30.22 PST ON 28 FEBRUARY 1963. THE PRIMARY LAUNCH OBJECTIVES WERE NOT ACHIEVED DUE TO THE FAILURE OF A SLV-2A SOLID MOTOR TO PROVIDE THRUST, AND DUE TO LOSS OF ROLL CONTROL OF THE SLV-2A VEHICLE INITIALLY AT 61 SEC AND LATER AT 100 SEC. TERMINATION OF THE FLIGHT AND APPARENT DESTRUCTION OF THE VEHICLE OCCURRED AT APPROXIMATELY 127 SEC. PRELIMINARY DATA INDICATE THAT THE S-01A VEHICLE REMAINED INTACT UNTIL ABRUPT LOSS OF SIGNALS AT 220 SEC.

SPECIAL INSTRUCTIONS

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FROM:
6595TH AEROSPACE TEST WG. VANDENBERG AFB, CALIF.

MISSILE FLIGHT SAFETY REPORTED SENDING A COMMAND DESTRUCT SIGNAL AT APPROXIMATELY 127 SEC. AT THIS TIME A PRESENT POSITION PLOTBOARD INDICATED THE VEHICLE TO BE APPROXIMATELY 47 STATUTE MILES DOWN RANGE AND APPROXIMATELY 26.6 STATUTE MILES IN ALTITUDE. THE DESTRUCT COMMAND ACTION WAS BASED ON VIOLATION OF THE EASTERN IMPACT LIMIT LINE CRITERIA. IT IS NOT CERTAIN IF THE DESTRUCT COMMAND WAS EFFECTIVE IN CAUSING DESTRUCTION OF THE SLV-2A BOOSTER; HOWEVER, THE BOOSTER LINK 2 TELEMETRY WAS LOST AT APPROXIMATELY COMMAND DESTRUCT TIME. THE BOOSTER LINK 1 TELEMETRY WAS ALSO INTERUPTED AT THE SAME TIME AND LOST COMPLETELY 7 SEC LATER. THE S-01A TELEMETRY DATA, AND RECEIPT OF SIGNALS FROM THE AIRBORNE TELEMETER ACQUISITION BEACON, AND THE S-BAND BEACON UNTIL 220 SEC INDICATE THAT DESTRUCTION OF THE S-01A VEHICLE DID NOT OCCUR AT THE TIME THAT DESTRUCT SIGNAL WAS TRANSMITTED. ABRUPT LOSS OF ALL S-01A SIGNALS AT 220 SEC, WHILE THE TRACKING ANTENNAS WERE STILL AT APPROXIMATELY 10 DEG. ELEVATION, IS SUGGESTIVE OF S-01A VEHICLE BREAKUP.

II. SIGNIFICANT EVENTS

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FROM:

6595TH AEROSPACE TEST WG, VANDENBERG AFB, CALIF.

PRELIMINARY VALUES OF SIGNIFICANT LAUNCH EVENTS ARE:

LIFTOFF (1348:30.22) PST	ZERO
SOLID MOTOR THRUST DECAY (NO's 1 AND 3) (WEB BURNOUT)	28 SEC
SOLID MOTOR ZERO THRUST (NO'S 1 AND 3) (END OF THRUST TAILOFF)	40 SEC
INITIAL LOSS OF ROLL CONTROL	61 SEC
SOLID MOTOR JETTISON (NO'S 1 AND 3)	71.3 SEC
STEERING INITIATED	92.1 SEC
FINAL LOSS OF ROLL CONTROL	100 SEC
MISSILE [redacted] BREAKUP	127 SEC
VTS VERLORT RADAR LOSS	219.2 SEC
VTS ACQUISITION BEACON LOSS	219.2 SEC
VTS TELEMETRY DATA LOSS (LINK 1)	219.2 SEC
VTS TELEMETRY DATA LOSS (LINK 2)	219.2 SEC
VTS TELEMETRY DATA LOSS (LINK 3)	219.2 SEC
SLV-2A LINK 1 TM LOSS	132.5 SEC
SLV-2A LINK 2 TM LOSS	127 SEC

III. SLV-2A PERFORMANCE

THE BOOSTER WAS NOT SUCCESSFUL IN ACHIEVING ITS OBJECTIVES. SOLID MOTOR NO. 2 DID NOT IGNITE AND DID NOT JETTISON [redacted] AND COMPLETE LOSS OF CONTROL RESULTED IN FLIGHT TERMINATION AT APPROXIMATELY T+127 SEC.

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FROM

6595TH AEROSPACE TEST WG, VANDENBERG AIR FORCE BASE, CALIF.

THE ABSENCE OF THRUST OF SOLID NO. 2 WAS EVIDENCED BY TELEMETRY MEASUREMENTS OF CHAMBER PRESSURE AND HEAT RATE AND WAS SUPPORTED BY A VISUAL HEAT PATTERN ON THE LAUNCHER BASE AND ALSO BY TRAJECTORY CHARACTERISTICS.

EVIDENCE TO SUPPORT THE CONCLUSION THAT SOLID MOTOR NO. 2 DID NOT JETTISON RESULTS FROM PERTINENT TELEMETER MEASUREMENTS AND CHASE PLANE OBSERVATION OF ONLY TWO SOLIDS SEPARATING FROM THE MAIN VEHICLE PLUS TELEMETRY INDICATIONS THAT NO'S 1 AND 3 DID JETTISON PROPERLY.

ROLL CONTROL WAS LOST TWICE DUE TO EXTERNALLY APPLIED ROLL MOMENTS WHICH WERE BEYOND THE CONTROL TORQUE CAPABILITY OF THE VERNIER ENGINES.

THE INITIAL LOSS OF ROLL CONTROL, WHICH WAS EVIDENCED ON ROLL RATE AND ATTITUDE ERROR AT APPROXIMATELY 61 SEC., WAS PRECEEDED BY MAXIMUM DEFLECTION OF THE VERNIER ENGINES AT 57 SEC IN RESPONSE TO EXISTING ROLL CONTROL SIGNALS. BY 62.9 SEC. THE ROLL RATE HAD REACHED THE TELEMETRY BANDWIDTH OF 8 DEG/SEC. ROLL RATE IN EXCESS OF 8 DEG/SEC EXISTED FOR APPROXIMATELY 5.5 SEC THEN DECREASED TO NEAR ZERO. THE ROLL ATTITUDE CHANGE ASSOCIATED WITH THIS RATE WAS AT LEAST 44 DEG AND CAUSED THE ROLL ATTITUDE GYRO

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FROM

6595TH AEROSPACE TEST WG, VANDENBERG AIR FORCE BASE, CALIF.

TO LOSE ITS PROPER REFERENCE. THUS, ALTHOUGH ROLL CONTROL WAS REGAINED AT APPROXIMATELY 68.5 SEC, THE ROLL ATTITUDE DEVIATION WAS SIGNIFICANTLY LARGE.

THE SECOND LOSS OF ROLL CONTROL OCCURRED AT 100.5 SEC AND WAS PRECEDED BY THE MAXIMUM DEFLECTION OF THE VERNIERS IN RESPONSE TO PREVAILING ATTITUDE ERRORS.

IN GENERAL, TELEMETRY DATA INDICATED THAT THE ROLL CONTROL, AS WELL AS THE PITCH AND YAW CONTROL CHANNELS, APPEARED TO HAVE FUNCTIONED PROPERLY AND THAT THE LOSS OF ROLL CONTROL RESULT~~S~~ED FROM EXTERNALLY APPLIED ROLL MOMENTS WHICH WERE BEYOND THE CONTROL ~~TORQUE~~ CAPABILITY OF THE VERNIERS.

BTL STEERING, WHICH WAS INITIATED AT 92.1 SEC CONSISTED OF MAXIMUM PITCH AND YAW COMMANDS. THESE COMMANDS WERE REQUIRED BY PREVAILING TRAJECTORY ERRORS BUT WERE NOT EFFECTIVE IN REDUCING THE ~~ERRORS XXXXWERE NEXXXXXXX~~ BECAUSE OF THE ADVERSE ROLL ATTITUDE OF THE VEHICLE ACQUIRED DURING THE INITIAL LOSS OF CONTROL. STEERING SIGNALS TEMPORARILY CEASED AT 105.3 SEC, BUT RESUMED AT SOMEWHAT LESS THAN MAXIMUM MAGNITUDE AT 108.1 SEC. BY 111.6 SEC THE [illegible] STEERING ORDER INCREASED

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FROM
6595TH AEROSPACE TEST WG, VANDENBERG AFB, CALIF.

TO MAXIMUM AMPLITUDE WHERE IT REMAINED UNTIL DATA CESSATION AT 126.8 SEC. DURING THIS INTERVAL THE PITCH STEERING ORDER WAS INTERMITTENT.

A RELATION BETWEEN THE FAILURE OF SOLID MOTOR NO. 2 TO BURN AND SEPARATE AND THE LOSS OF ROLL CONTROL HAS NOT BEEN ESTABLISHED AT THIS TIME.

IV. S-01A PERFORMANCE.

ALL S-01A VEHICLE SUBSYSTEMS WERE IN NORMAL STANDBY CONDITION AT THE TIME OF FLIGHT TERMINATION AT 127 SEC. THE CONTINUATION OF S-01A TELEMETRY BEYOND THIS TIME INDICATED THAT THE S-01A VEHICLE REMAINED INTACT UNTIL APPROXIMATELY 220 SEC AT WHICH TIME TELEMETRY CEASED ABRUPTLY. THE TELEMETRY MONITOR OF THE D-TIMER INDICATED TIMER START AT 201 SEC AND EVENT INTERPRETED AS SEPARATION BACK-UP 12 SEC LATER. THESE INDICATIONS HAVE NOT BEEN FULLY INTERPRETED BUT TEND TO SUPPORT THE CONCLUSION OF CONTINUED INTEGRITY OF THE S-01A VEHICLE BEYOND THE BREAK-UP OF THE BOOSTER VEHICLE.

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V. SPACE-GROUND COMMUNICATIONS

TELEMETRY DATA FROM ALL LINKS WERE SATISFACTORILY RECEIVED AND RECORDED PRIOR TO THEIR COMPLETE LOSS AT THE TIMES LISTED IN PARAGRAPH II EXCEPT FOR A SHORT DROP-OUT OF ALL LINKS FROM 126.5 SEC TO 127 SEC.

VI. COUNTDOWN

A. THE FINAL COUNTDOWN WAS INITIATED ON SCHEDULE AT 0355 PST, ON 28 FEBRUARY 1963 AND PROCEEDED TO LIFTOFF WITH ONE HOLD WHICH WAS IMPOSED AT T-15 MIN. FROM 1245 TO 1333. THIRTY FIVE MIN. OF THE HOLD WERE DUE TO AN LMSC OXIDIZER PUMP PROBLEM. THIRTEEN MIN. WERE DUE TO RANGE CLEARANCE.

ADDITIONAL PROBLEMS AND DELAYS ENCOUNTERED WERE:

1. IN TASK 6, THE SIGNALS FROM DAC LINKS ONE AND TWO, CHANNEL A WERE UNSATISFACTORY. THE SIGNALS LATER RETURNED TO NORMAL.

2. AT 0700 THE S-01A VEHICLE AND PAYLOAD WERE WITHOUT AIR CONDITIONING FOR 30 MIN. DUE TO TRANSFER OF $\overset{N}{\text{GM}}_2$ GAS SUPPLY TRAILERS.

3. THE S-01A PAYLOAD DVM-3 TIMING MODULE FAILED TO RESPOND TO ON-OFF REAL TIME COMMANDS.

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SECURITY CLASSIFICATION [redacted]

FROM

6595TH AEROSPACE TEST WG, VANDENBERG AIR FORCE BAS[redacted]

NORMAL OPERATION WAS RESTORED WHEN THE S-01A POWER WAS CYCLED OFF AND ON.

4. AN LMSC PUMP FAILED TO OPERATE DURING OXIDIZER LOADING BECAUSE OF A DEFECTIVE RELAY IN THE PUMP CONTROL CIRCUITRY. CYCLING THE POWER OF F AND ON RESTORED NORMAL OPERATION.

B. THE FIRST COUNTDOWN WAS INITIATED AT 0355 PST, 27 FEBRUARY 1963 AND PROCEEDED TO TASK 12 WHEN IT WAS CANCELLED BECAUSE OF A PROBLEM IN THE SOLID BOOSTER CIRCUITRY WHICH COULD NOT BE RESOLVED IN TIME TO PERMIT LAUNCHING WITHIN THE LAUNCH WINDOW. INVESTIGATION REVEALED THAT TWO CONNECTOR PLUGS HAD BEEN INADVERTENTLY INTERCHANGED. A COMPLETE RECHECK OF THE BOOSTER SYSTEM WAS PERFORMED PRIOR TO START OF THE SECOND COUNTDOWN.

ADDITIONAL PROBLEMS AND DELAYS WERE:

1. THE THREADS IN A DAC PRIMACORD SEPARATION CHARGE COUPLING WERE DEFECTIVE, NECESSITATING REPLACEMENT OF THE COUPLING.

2. IN TASK 6 THE S-01A TELEMETER LINK 3 BECAME INOPERATIVE. REQUIREMENT FOR LINK 3 WAS WAIVED BY THE AIR FORCE. NEAR-NORMAL OPERATION SUBSEQUENTLY

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RETURNED. THE TRANSMITTER WAS NOT REPLACED PRIOR TO THE SECOND COUNTDOWN.

3. THE HORIZON SENSOR TARGET SIGNAL WAS ABNORMAL. PERSONNEL SENT TO THE PAD DISCOVERED A LOOSE CONNECTION IN THE TARGET RECEPTACLE.

4. THE LAUNCH COMPLEX PUBLIC ADDRESS SYSTEM WAS DISRUPTED FOR 30 MIN. IN TASK 9. NORMAL OPERATION WAS RESTORED BY REPLACING AN AMPLIFIER.

VII. AEROSPACE GROUND EQUIPMENT

THE AEROSPACE GROUND EQUIPMENT FUNCTIONED SATISFACTORILY TO ACCOMPLISH THE BOOSTER AND ORBITAL STAGE PRE-LAUCNH CHECKOUT.

THE FOLLOWING PROBLEMS OCCURRED DURING THE COUNTDOWN:

A. A RELAY IN THE CONTROL CIRCUITRY TO THE LMSC PAD OXIDIZER PUMP FAILED TO ACTUATE DURING S-01A OXIDIZER LOADING. THE PROBLEM WAS RESOLVED BY CYCLING THE POWER OFF AND ON.

B. A DEFECTIVE AMPLIFIER DISRUPTED THE LAUNCH COMPLEX PUBLIC ADDRESS SYSTEM FOR 30 MIN. NORMAL OPERATION WAS RESTORED ON REPLACEMENT OF THE AMPLIFIER.

VIII. PAD DAMAGE

PAD DAMAGE IS LESS THAN ANTICIPATED, ALTHOUGH

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FROM:
6595TH AEROSPACE TEST WG, VANDENBERG AFB, CALIF.

GREATER IN THE LAUNCHER BASE AREA THAN ON SLV-2 LAUNCHES. REPLACEMENT OF THE CABLING BETWEEN THE LAUNCHER AND MAST WILL BE NECESSARY AS WELL AS AIR CONDITIONING DUCTS AND LAUNCHER HYDRAULIC LINES.

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